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ABSTRACT

Use of online information services is currently widespread in public, academic, government, and corporate libraries and information centers. The trend is for smaller libraries of all varieties to install terminals and obtain passwords, while larger libraries add systems of all types. Even in the face of a severe recession, online growth rates have held up well. In the long term, however, the online industry faces serious challenges--economic, technological, and sociological--which it may not be prepared to meet. Online services firms need thoughtful new strategies to deal with user desires for downloading, local control, and simple-to-use systems and protocols. Such strategies need to be based more upon market needs and less upon technological capabilities. Database publishers also need to arrive at an appropriate price per record which is fair compensation for later reuse within organizations, and to begin experimenting with new forms of document delivery. Online users can help themselves and the information industry by enhancing their organization's information resources, becoming activist consumers of online services, and expanding their horizons to include not only bibliographic databases but the numeric services. (DMC)

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STATE OF THE ART AND FUTURE OF ONLINE SERVICES

Southeastern Library Association/
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Workshop"
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STATE OF THE ART AND FUTURE OF ONLINE SERVICES

I suspect that all of you have emerged from stimulating morning sessions full of enthusiasm for online access. Why not--it's a wonderful invention!

Compared to traditional methods of locating and retrieving information, online searching is fast, convenient, and flexible. Literally hundreds of databases are available for instant access, day and night, from virtually anywhere, at relatively low cost.

All of these wonderful capabilities are very new. They were created by the convergence, 15-20 years ago, of a series of technological developments. Three of these were crucial:

- First, the commercialization of third-generation computers, which simultaneously serve multiple users. This ability to "share time" on the same machine created a whole new industry called, appropriately enough, the timesharing business.
- Second was installation of telecommunications networks, which provide low-cost links between remote users and these timesharing computers. With modern telecommunications, you needn't even be in the same city to share time.
- Last was the development of computerized typesetting systems which permitted publishers to generate databases as an inexpensive by-product of producing printed journals.

These three technological developments were the keys to online access, but economics also played an important part in its introduction.

- First, sharing the cost of both computing power and communications among a large number of users permitted prices to be reduced significantly below the cost of internal systems.
- Second, database royalties initially were very low. Publishers viewed the databases as costing very little to produce and they saw online access as limited in revenue potential.

In the bibliographic online sector, where online access to textual files has been marketed since 1971, these low costs have translated, generally, into low prices. Charges traditionally were based on actual usage, as measured by connect time.

But these developments also underlie another sector of the online industry--commercial timesharing services, which today deliver numeric databases. These nonbibliographic online services offer more than information retrieval; they allow users to manipulate data and generate reports of many kinds, including--on some systems--graphics.

By some estimates, this numeric database sector, dominated by such firms as Data Resources and Chase Econometrics, has ten times more revenue but only one-tenth as many clients as bibliographic online services. Prices are not as low, and charges are based on computer resource usage rather than connect time.

However you measure the online services industry, it has grown quite rapidly, especially in the last five years.

Today, most libraries and information centers in corporations of any size have at least one terminal and access to at least one online service. Most large academic libraries use information retrieval services and, of course, also access library networks for cataloging and other resource sharing purposes. Many large public libraries, notably in such cities as Minneapolis, Chicago, New York and Los Angeles, have used online access at the reference desk for several years.

Today, the trend is for smaller libraries of all varieties--corporate, government, academic, public--to install terminals and obtain passwords. The trend for larger libraries is to add systems--not just DIALOG, but also BRS; not just SDC, but also the New York Times; not just traditional bibliographic systems, but also Dow Jones.

Even in the face of a severe recession, online growth rates have held up well. In the near term, online access continues to have a bright future.

My view of the long term, however, is not as rosy. Today's online industry faces serious challenges--economic, technological, sociological--which it may not be prepared to meet.

Survival is not, I think, in question. Online services will co-exist with new information retrieval methods, just as radio co-exists with television, each finding an appropriate market niche. What is at issue is maintaining today's rapid growth rates.

In my view, powerful forces are converging to challenge today's centralized bibliographic online services.

First, the economics of online access are changing. It's true that computing power is still inexpensive and becoming even more so. But other factors--notably telecommunications and databases--are progressively less low-cost.

- Deregulation has resulted in much higher costs to Tymnet, Telenet, and other networks; these are being passed along to users.
- Database publishers no longer see databases as byproducts or online access as unthreatening--many are concerned about the future for their printed services and are insisting that online usage pay its fair share. Database royalties are rising.

With all that, online access is still relatively inexpensive--but it's no longer the unbelievable bargain it was as recently as five years ago.

There are other economic issues. Consider two trends our research has revealed: the rush to acquire higher speed terminals and the desire to download search results.

- As long as online charges are based upon connect time, online searchers will want to use higher-speed terminals. They'll be online less and each search will cost less. But this is a vicious circle in many ways. Higher speed terminals reduce revenues for the online services companies and for database publishers. They in turn respond by raising connect hour prices and instituting charges for each record output.

- Another issue is the desire to download information. From the user's viewpoint, this is similarly logical and justifiable. What is downloading? It's receiving online search results in computer readable form. Once you store this output in your microcomputer, you can do whatever you wish with no further payments to the online service or the database publisher. Depending on what you do with the data, downloading may be called stealing! To the extent downloading is used to build files that then substitute for use of online systems, future online revenues will suffer--and prices will rise.

To maintain current rapid growth rates in the face of higher speed terminals and the spectre of downloading, the bibliographic online services firms must either a) penetrate new markets or b) expand revenues from existing customers in libraries.

Neither is an easy task.

- First, today's online systems are very complex. Opening new markets among people who aren't information specialists isn't easy. Potential users who don't understand--as you all do--terms like "bibliographic" and "retrospective" have to work hard to grasp principles behind the systems. Infrequent searchers find it difficult to remember commands and don't like to fumble at the terminal at high connect hour rates. Also, end users want facts, not titles and index terms.

. Second, libraries of all descriptions are facing severe budget squeezes. Trying to expand revenues in a market with less to spend than last year is not a fruitful investment of time and energy.

Recent research reveals that information specialists could be the key to reaching deeper into organizations and thereby increasing the demand for online services. BUT, unless libraries obtain additional resources in staff, training, and budgets, they are easily overloaded and may prefer to stifle rather than to build demand.

So much for the economics. Let's turn to technology, which also is changing rapidly. The silicon chip revolution is here to stay, and personal computers are adding capabilities at an astounding rate. In a decade or so, the microcomputer will be as powerful as today's mainframes. I don't think we can really imagine what that statement means.

Anthony Kent, British consultant to the information industry, forecasts that we will soon be able, as individuals, to possess "an information processing capability in excess of that currently provided by the sum total of existing publicly accessible online systems."

He goes on to say, "If you think that an exaggerated claim, may I remind you that today it is possible to acquire for personal use a microcomputer with both processing and storage capacity at least equal to that available only in a few dozens of organizations in 1960--and at one-hundredth of the price."

In addition to the microcomputer, technology is giving us other "local options." For example, videodisks, although still

developmental, promise to provide low-cost, high-density local information storage. The National Library of Medicine is researching a video-disk system which can store the entire Mediars file. I think they'll succeed.

A move to substitute local options for centralized online access already is underway, according to Carlos Cuadra, founder of SDC's Search Service and now consultant to many information companies. He recently wrote: "In the 1980s, we are seeing a reversal of the massive trend toward centralization of computer power. With the cost of computer power and disk storage dropping an average of 25 to 30 percent a year, and with the growing availability of ready-made computer programs which cost far less to buy than to build, it is becoming increasingly attractive to provide data processing facilities in-house, in lieu of or in combination with the use of external online services."

So here we are, on the one hand, with the economics changing radically, prices rising, customers adding high speed equipment, and downloading a fact of life. On the other hand, the technology to download, store, retrieve, and manipulate is or soon will be here at a price individuals can afford.

As if this weren't quite enough future shock to deal with, powerful sociological trends support these economic and technological developments.

According to John Naisbitt, researcher and author of "Megatrends," we are creating a multiple option, highly market segmented society which is characterized by decentralization and the demise of umbrella type organizations of all kinds.

Let me quote from a recent speech:

"In America, the large, general purpose instrumentalities are folding everywhere. An early sign and instructive analog of this was the demise (just over a decade ago) of Life, Look and Post, the huge circulation, general purpose magazines. That same year, 300 special purpose magazines were created, most of which are still being published. Four hundred or so were added the following year, and so on. There are now more than 4,000 special purpose magazines being published in the United States, and no general purpose magazines."

Other evidence of this trend: Network television is losing ground to cable, videodisks, and special-interest networks. Department stores are giving way to boutiques.

I would be surprised if centralized online services aren't affected by these same basic trends. The growing attractiveness of microcomputers for information retrieval stems in part from growing user demand for "local control."

If, indeed, the economics of online services are changing; if technological developments are creating new--possibly fitter--competition; if sociological trends favor the small and local over the large and centralized--what then are the implications for online services companies, for database publishers, for online searchers?

Let's consider first the online services firms:
They need thoughtful new strategies to deal with user desires for downloading, local control, and simpler-to-use systems and

protocols. Strategies need to be based, in essence, more upon market needs and less upon technological capabilities.

There is some evidence that online services firms are beginning to develop new strategies for this changing market. Here are two cases:

- This month, DIALOG and BRS both announced new low-cost evening hours for personal computer users. I'm sure you'll be hearing more about Knowledge Index and After Dark services.
- Also this month, Data Resources announced the availability of DRILINK, a microcomputer software package which links a personal computer to DRI's massive online databases. It allows rapid downloading of data to the user's computer and then provides for manipulation of the data locally, at the user's desk. DRI's marketing literature stresses that the entire system is menu-driven, so that "anyone who can get cash from an automatic teller machine can get analyses and answers from DRILINK."

These are heartening developments, and I hope we see more of them. What about the database publishing community?

Database publishers are less vulnerable to technological changes in delivery mechanisms than are online services firms. Once data is in digital form, properly fielded or tagged, it can be delivered online, on videodisks, on floppy or hard disks, by direct broadcast satellite, by FM sideband, and by all the other technologies.

But database publishers are vulnerable to a certain complacency about the marketplace. Until recently, most online users have been bowled over by the very fact of online access to all this information. Although the excitement still exists for new users, some searchers are expressing concern about such items as

- Bad data, otherwise known as garbage records
- Poor user materials, and
- Inclusion of articles that aren't authoritative

Furthermore, the document delivery problem hasn't been solved. You all know that users don't want citations--they want information. They don't want references, they want answers. Those answers are found in the original documents. If you can't obtain them, online access hasn't been helpful. Indeed, it's been harmful by raising expectations of answers and then not supplying them.

Database publishers can't ignore the document delivery problem. Neither can they ignore downloading. It's not sufficient to forbid downloading. You might as well forbid photocopying. Database publishers must arrive at an appropriate price per record which is fair compensation for later reuse within organizations.

In addition to responding to these challenges, database publishers need to begin--immediately--experimenting with new forms of delivery. In this connection, Biological Abstracts is right on target with the BITS program announced this spring. BITS provides a current awareness service on floppy disks. These are mailed to teams of scientists who store the information in their microcomputers and then can access that information without further restriction or payment to BIOSIS.

In sum, database publishers who want to expand their own markets must take responsibility for their own futures and cease depending as heavily upon online services firms.

Now, for you here today, the users of online systems.

There are three areas in which our research reveals you can help yourselves while simultaneously helping the industry to cope with its new challenges.

- First, recognize that you are an immense resource for the organization which employs you. Educate your management to this value. Your long-term aim should be to enhance the organization's information resources ... not to build an empire for the library but to ensure that your organization has the information it needs for survival in its own changing market.
- Second, be as activist a consumer of online services as you are of automobiles and other valuable goods and services. Don't accept shoddy workmanship. Don't expect low prices to produce the highest quality. Don't remain silent when you have complaints. If you're going to spend your library's precious budget dollars on online access, be certain you are getting value for the investment.
- Finally, expand your horizons. Bibliographic database services are not the only variety. Once you've mastered those, look into the numeric services to better serve your organization.

Key roles in the future health of the online community will be played by the online services firms, the database publishers, and the users. All of us have tough challenges to meet during the next decade. If we overcome them, the future for online services will be much brighter than the one I've painted today.